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Weyerhaeuser timber company

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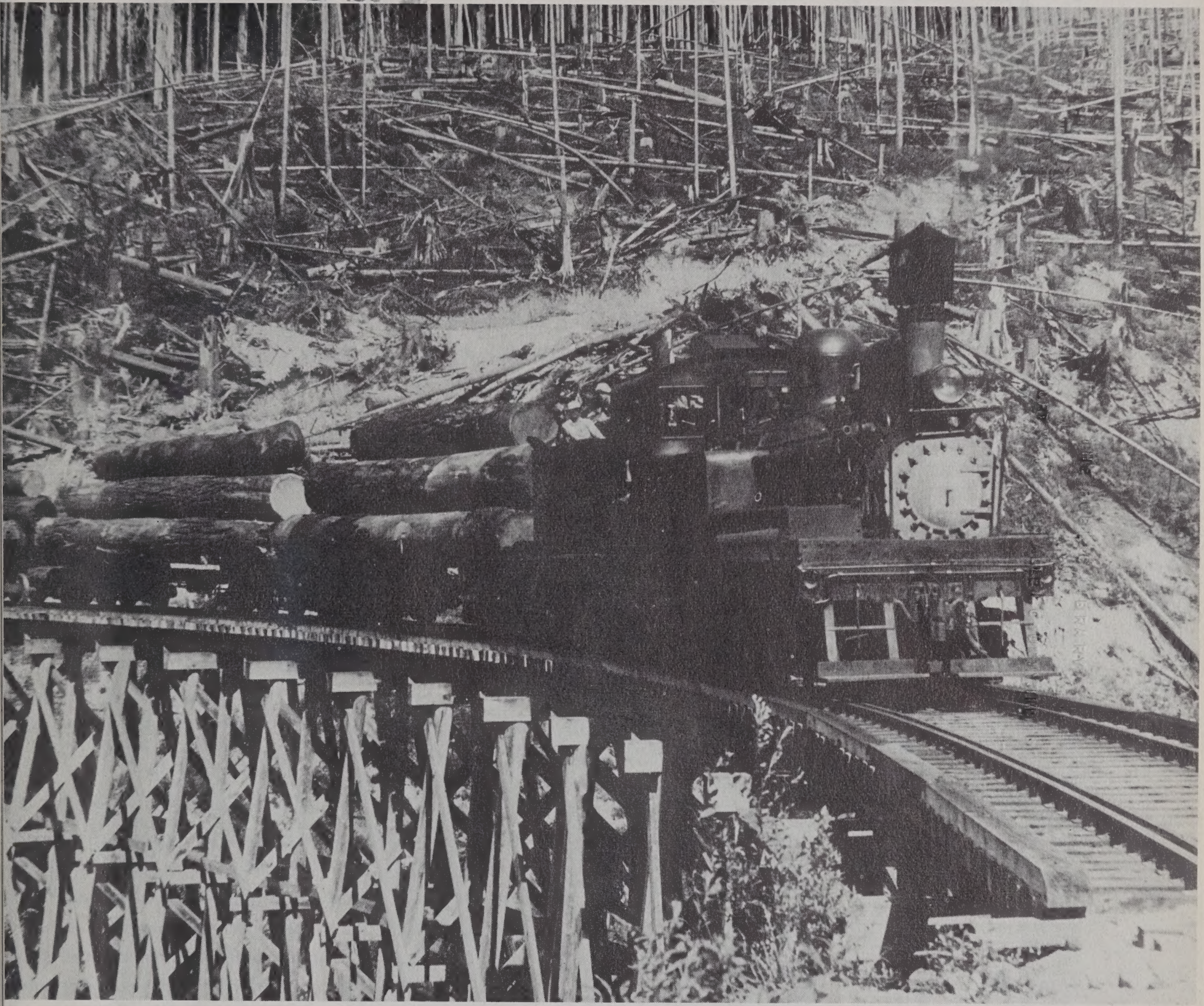

LUMBER RAILROADS

OF THE

WEYERHAEUSER TIMBER COMPANY

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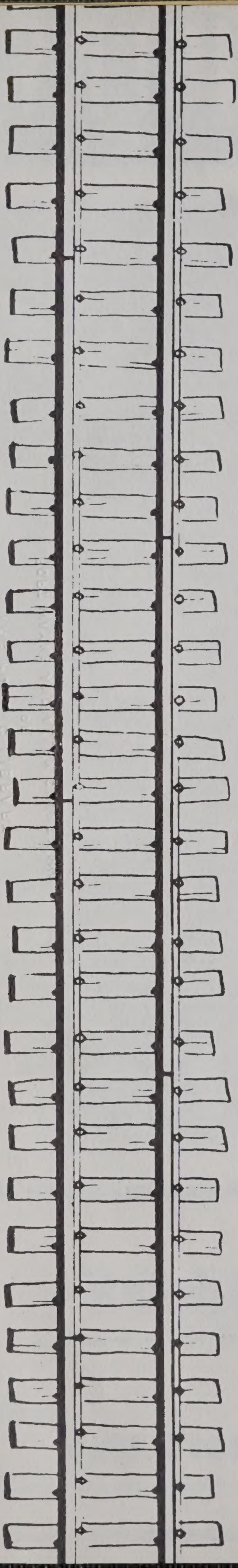

PACIFIC RAILWAY
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A HISTORICAL QUARTERLY

Donald Duke............Editor John O'Connell........Asso. Editor

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LUMBER RAILROADS
OF THE
Weyerhaeuser Timber Company

By

Arthur J. Beuter

This issue covering the railroad development of the Weyerhaeuser Timber Company is the third in a series of reprints devoted to Western Railroads as they originally appeared in the BALDWIN LOCOMOTIVE MAGAZINE.

The Pacific Railway Journal is deeply grateful to the Baldwin-Lima-Hamilton Corporation for permission to reproduce this issue. Also thanks go to our friend Gerald M. Best who compiled the locomotive roster and whose April 1935 copy of BALDWIN LOCOMOTIVES produced this issue. Appreciation also is extended to the Weyerhaeuser Timber Company who located two old photographs and Al Krieg who added the more modern touch.

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Articles, drawings and pictures of historical nature are welcome. However, we assume no responsibility for the return of material unless accompanied by sufficient postage. The editors do not hold themselves responsible for, nor do they necessarily agree with the opinions expressed in the Pacific Railway Journal and reserve the right to reasonably edit all copy. The Pacific Railway Journal is a non profit magazine, published for the interest in the preservation of railroad and traction history. Address all correspondence to the Pacific Railway Journal, 2304 Melville Drive, San Marino, California.

LUMBER RAILROADS
OF THE
Weyerhaeuser Timber Company

By Arthur J. Beuter
District Manager, The Baldwin Locomotive Works, Portland, Oregon

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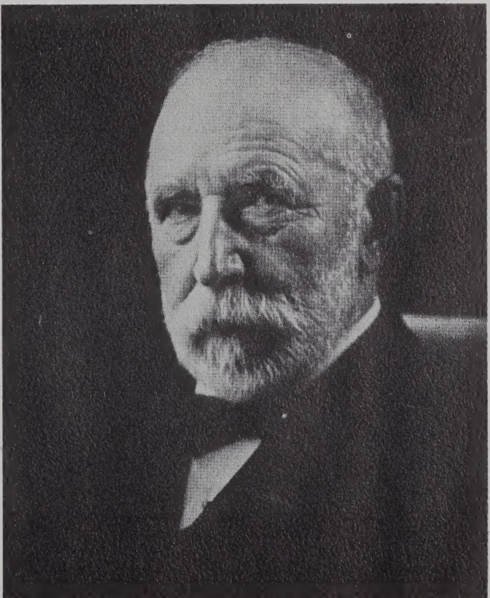
Frederick Weyerhaeuser, founder of the Weyerhaeuser Timber Company, began his career in the lumber industry in 1856 by securing employment in a sawmill at Rock Island, Illinois. Abnormal energy, thrift, and the foresight to invest his savings to the best advantage soon placed him in possession of his own sawmill.

Logs were being driven down streams and delivered to the sawmills by rivermen, and as the lumber business developed it became apparent to Mr. Weyerhaeuser that the transportation of logs was one of the major problems of the industry.

Mr. Weyerhaeuser prospered in the sawmill business and invested his savings in the timberlands along the Chippewa River in upper Wisconsin. By 1870 the Chippewa River was lined with sawmills, and the congestion of log drives and confusion in identifying ownership of the logs upon arrival at the mills, made it impossible for the sawmill owners on the lower river to obtain sufficient logs. This condition led to the forming of the Mississippi River Logging Company, of which Frederick Weyerhaeuser became president in 1872, and marked the beginning of the Weyerhaeuser interests.



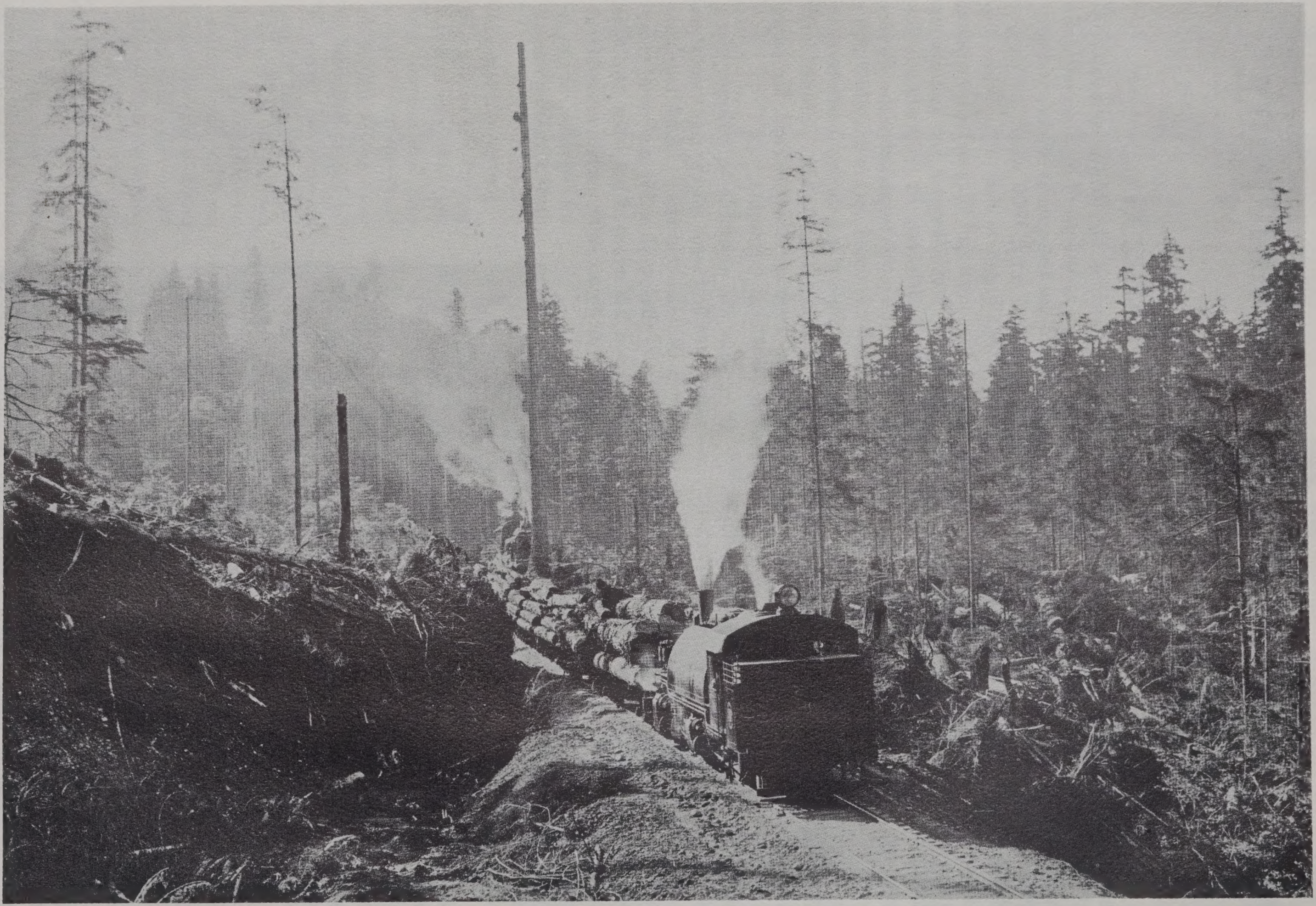
FREDERICK WEYERHAEUSER

The Mississippi River Logging Company bought up white pine forests in Wisconsin and drove their logs down the rivers to associate companies in the sawmill business. As additional timber was required, Mr. Weyerhaeuser established, with the assistance of his associates, the domination of the Lake states lumber industry which continued until 1900 when the timber in this district began to thin out. While the forests of Wisconsin and Minnesota were being cut, Frederick Weyerhaeuser was purchasing timber in the Northwest. In 1900 when it was decided to develop this investment, the Weyerhaeuser interests owned approximately 2,000,000 acres of timberland in the Northwest, or the equivalent in acreage to the combined land area of the states of Rhode Island, Delaware and the District of Columbia.

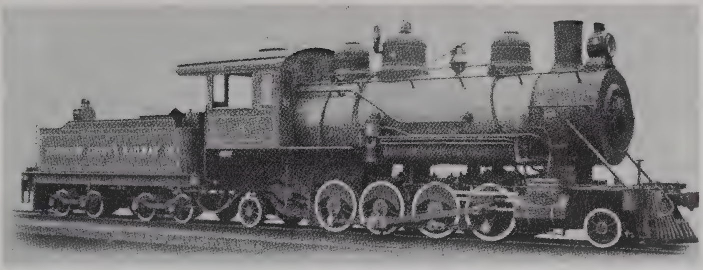
No records are available to indicate when railroads were first built for the transportation of logs in Illinois, Wisconsin, and Minnesota, but it is quite obvious that this method of transportation was not adopted until the available stands of timber were sufficiently removed from navigable rivers to make river driving impractical.

Due to the topography of the country in the fir forests in western Washington and Oregon, the rivers were not as adaptable to log transportation as were the rivers in Wisconsin and Minnesota, and railroads were already being used for the transportation of logs when the Weyerhaeuser companies started operating in the Northwest.

Early logging railroads were built with steep grades and sharp curves, and light weight rail was used. Very little thought



Mallet Locomotive of the 2-6-6-2 Type, Built by The Baldwin Locomotive Works in 1928, Hauling Logs at the Skookum Chuck Operation of the Weyerhaeuser Timber Co.



Mikado Type Locomotive Built for the Thurston County Railway, a Weyerhaeuser Subsidiary, in 1912

Gauge of Track	4′ 8½″
Cylinders	18″ x 24″
Steam Pressure	180 lb.
Drivers, Diameter	44″
Weight on Drivers	113,400 lb.
Weight, Total Engine	141,000 lb.
Weight, Engine and Tender	210,000 lb.
Tractive Force	27,000 lb.

was given to what might be encountered in the way of grades and curves when the railroads were built farther into the timber. These conditions created a demand for geared locomotives and most of the early locomotives used in the woods were of this type.

As the railroads increased in length, the speed at which the trains could be operated became an important factor. It was, of course, necessary to operate slowly where the steep grades and sharp curves occurred; however, on the remaining portion of the road where good track conditions existed, the speed was still limited to that of the geared locomotive. When railroad development reached a distance of ten miles or more, it became evident that rod locomotives would be more economical, due to the greater speed at which they could be operated.

The Weyerhaeuser Timber Company, in developing its properties, recognized this advantage of the rod locomotive, also the fact that when a sufficient amount of timber was to be hauled over a given railroad it was decided economy to keep the grades and curves at a minimum and the roadbed itself in good condition.

The first rod locomotives built for the Weyerhaeuser subsidiaries were comparatively small, due to the light weight of rail used, and to the light tonnage requirements. However, these locomotives were designed with small diameter drivers, short rigid driving wheelbase, liberal clearances, and the method of equalizing the weight on the wheels, together with the construction of the spring rigging, made the running gear on these rod locomotives unusually flexible and adaptable to logging conditions.

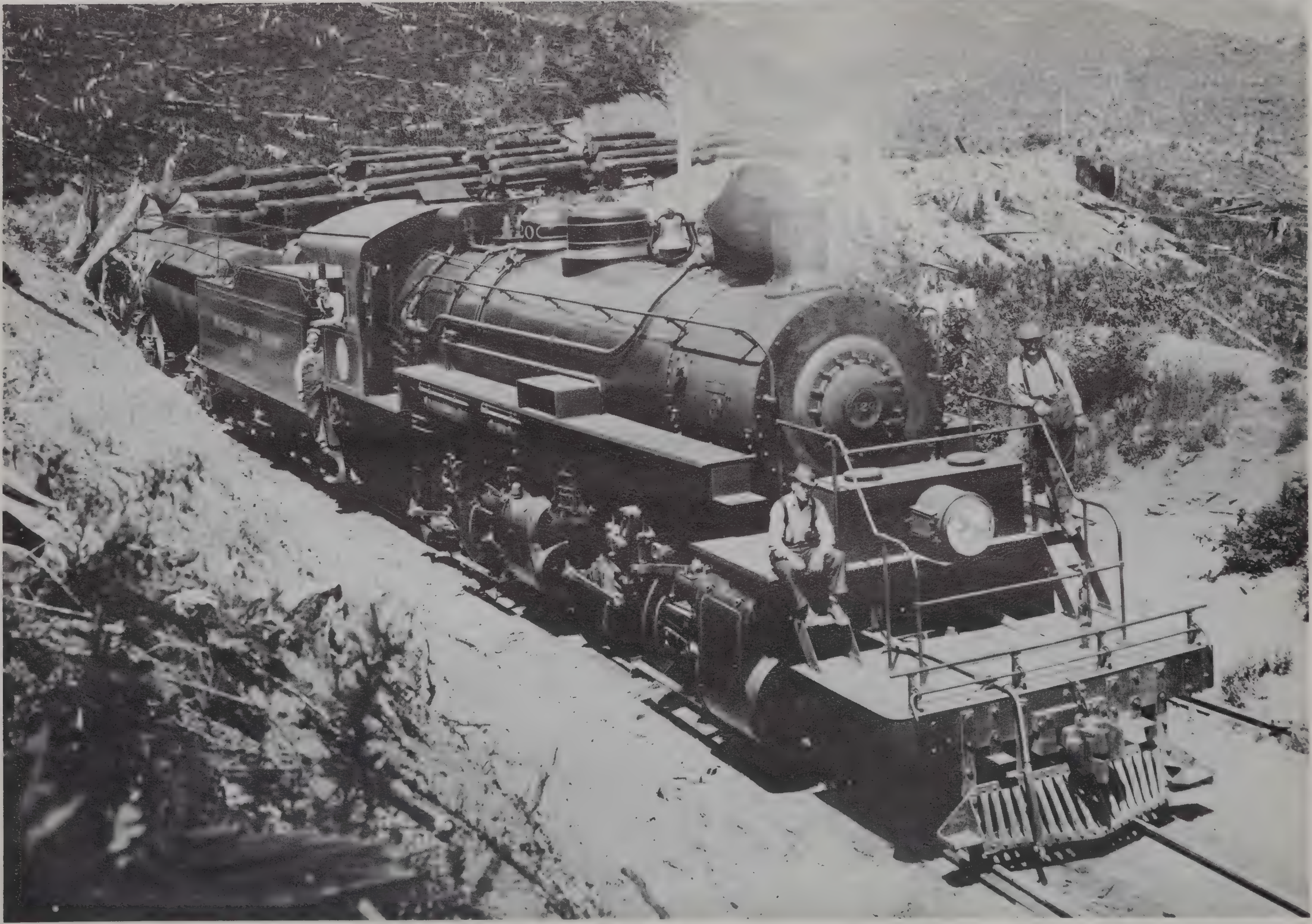
The Thurston County Railroad (Mud Bay Logging Company) was the first Weyerhaeuser affiliate to consider the rod locomotive for logging service. In 1908 they purchased a Prairie type 2-6-2 saddle tank locomotive having 15 in. by 22 in. cylinders, 44 in. diameter drivers, 140 lb. working pressure, 13,390 lb. tractive effort, and weighing 63,000 lbs. on drivers, with a total weight of 86,000 lbs. The water capacity was 1,000 gallons. The fuel used was wood which was carried on a separate car coupled to the locomotive. The track condition under which this locomotive operated was 40-pound rail, maximum 6 per cent grades and 35 degree curves.

In 1912 this company purchased their second rod locomotive, A Mikado type 2-8-2 oil-burning locomotive with separate tender, having 18 in. by 24 in. cylinders, 44 in. diameter drivers, 180 lb. boiler pressure, 27,000 lb. tractive effort, 113,500 lbs. on drivers and 141,000 lbs. total engine weight, exclusive of tender. This locomotive was used on their main line on 56-pound rail, with maximum 4 per cent grades and 25 degree curves.

The Twin Falls Logging Company (Clark County Timber Company) was the first Weyerhaeuser subsidiary to purchase Baldwin loco-

Mallet Locomotive Built by Baldwin for the Clemons Logging Company, a Weyerhaeuser Property, in 1923

Gauge of Track	4′ 8½″
Cylinders	17″ and 26″ x 24″
Steam Pressure	200 lb.
Drivers, Diameter	44″
Weight on Drivers	182,000 lb.
Weight, Total Engine	220,000 lb.
Tractive Force	37,500 lb.



WEYERHAEUSER TIMBER COMPANY 120—a 2-6-6-2 giant built by Baldwin in 1936 descends a Washington grade with 20 cars of logs.
—Courtesy of Weyerhaeuser Timber Co.

motives in the Northwest. In 1911 they purchased two Mikados for their operation at Yacolt, Washington, of the same size and design as previously mentioned for the Thurston County Railroad, and later purchased a third Mikado which was slightly heavier, having 138,500 lbs. on drivers and 35,400 lbs. tractive effort.

The Mikado type locomotive, as Baldwin's developed it for the logging industry, became popular in this service, and from 1913 to 1924 was purchased by the following Weyerhaeuser subsidiaries: Cherry Valley Timber Company, two; Humbird Lumber Company, one; Snoqualmie Falls Lumber Company, three; and the Siler Logging Company, one. During this period the Snoqualmie Falls Lumber Company also purchased a 2-6-2 superheated saddle tank locomotive with 18 in. by 24 in. cylinders, 44 in. diameter drivers, 175 lb. working pressure, 26,300 lb. tractive effort, 115,000 lbs. on drivers and 153,000 lbs. total engine. This locomotive was built to operate on 56-pound rail, 7 per cent grade, and 30 degree curves.

When some of the larger logging companies increased their production, they created a demand for heavier locomotives. Axle loads were limited to the weight of rail used and by the trestle construction. The geared-locomotive builders solved their problem by applying a third four-wheeled truck, thus enabling them to increase the weight of their motive power by one third for a given weight of rail. However, the four pairs of drivers on the Mikado type locomotive could not be increased in number on account of the prevailing curvature until the 2-6-6-2 compound Mallet type of locomotive was adapted to logging service.

The difficulties of economic speeds which the main line railroads had experienced with compound Mallets were not a factor in logging. Geared locomotives had an economic speed of approximately ten miles per hour, whereas the compound Mallets could be operated at more than twice this speed before the objectionable features of compounding experienced by the main line railroads were developed.

The articulated feature of these locomotives was also a decided advantage in logging service due to the number and sharpness of curves often encountered on these roads. Before the articulated locomotives were used, all types of locomotives in logging service had to turn tires on account of flange wear. The articulated feature of the Mallets made them so flexible in

Photo by John D. Cress, Seattle

Topping a Five-Foot Douglas Fir Tree. Branches are trimmed to a point where the trunk is 22 inches in diameter—in this case 185 feet from the ground—and the top is then cut away to avoid danger from breaking limbs when the tree is felled.

WEYERHAEUSER TIMBER C

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Number	Type	Builder	Builder's No.	Date Built	Drivers
1	Shay 2T	Lima	2030	1907	32
2	Shay 3T	Lima	3090	1920	36
2	2-8-2T	Baldwin	53146	1920	41
3	Heisler 3T	Heisler	1562	1928	40
4	Heisler 3T	Heisler	1573	1928	40
5	Shay 3T	Lima	3316	1928	36
9	2-6-6-2T	Baldwin	62068	1937	44
99	2-6-2T	Porter	5030	1912	
100	2-6-2	Cooke	62965	1921	48
101	Heisler 3T	Heisler	1562	1928	40
101	2-8-2	Baldwin	39787	1913	48
102	2-8-2	Baldwin	57705	1924	44
102	2-8-2T	Baldwin	53146	1920	41
103	2-8-2	Baldwin	37539	1913	48
104	No Data				
105	2-8-2	Baldwin	37581	1910	44
105	2-6-6-2T	Baldwin	60784	1929	44
106	2-6-6-2T	Baldwin	60785	1929	44
107	2-6-6-2T	Baldwin	61355	1930	44
108	2-6-6-2T	Baldwin	59087	1926	44
109	2-8-2	Baldwin	41710	1914	
110	2-6-6-2T	Baldwin	60561	1928	44
110	2-6-6-2T	Baldwin	62064	1937	44
111	2-6-6-2T	Baldwin	57601	1924	44
111	2-6-6-2T	Baldwin	60811	1929	44
112	2-6-6-2T	Baldwin	62065	1937	44
114	2-6-6-2T	Baldwin	60343	1929	44
120	2-6-6-2	Baldwin	61904	1936	51
200	2-8-8-2	Baldwin	60837	1929	51
201	2-8-8-2	Baldwin	61753	1933	51
	Climax 3T	Climax	1589	1921	36
	Shay 2T	Lima	2671	1913	36

Or

Number	Type	Builder	Builder's No.	Date Built	Drivers
1	2-8-2	Baldwin	37496	1912	44
2	2-8-2	Baldwin	37497	1912	44
3	Heisler 3T	Heisler	1539	1927	38
4	2-6-6-2	Baldwin	61781	1934	51
5	2-6-6-2TT	Baldwin	59701	1926	44
6	2-6-6-2	Baldwin	60412	1928	44
7	2-6-6-2TT	Baldwin	58529	1925	44
8	2-6-6-2TT				

Subsidiaries of

Snoqualmie Falls Lumber Co.

1	2-8-2	Baldwin	#44056—1916
2	2-8-2	Baldwin	#44276—1916
3	Climax	Climax	# 2969—1918
4	Shay	Lima	# 2969—1918
5	2-8-2	Baldwin	#52235—1919
6	2-6-2T	Baldwin	#56323—1923

Y - LOCOMOTIVE ROSTER

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Engine Weight	Boiler Pressure	Tractive Effort	Remarks
100,000	200 #	22,600	Originally Stillwater Logging Co. #1, then Cherry Valley Logging Co. #1.
189,000	200 #	35,100	Ex Cherry Valley Logging #2; became White River Lumber Co.
124,500	180 #	21,100	Originally Simpson Logging Co. #2, Peninsular Ry. #2. Also operated as WTC #102. Sold to City of Prineville Ry. #5.
198,000	200 #	43,600	Originally WTC #101. Sold to Kosmos Timber Co. #8.
198,000	200 #	43,600	To Mud Bay Logging Co. #4.
184,200	200 #	38,200	To British Columbia Forest Products Ltd.
247,000	200 #	42,500	Converted to 2-6-6-2T plus T and transferred to Oregon operations #8.
			Ex Campbell Lumber Co. #6.
127,500	180 #	24,800	Ex Hetch Hetchy #5; to Sutherlin, Ore.
198,000	200 #	43,600	See #3.
175,000	170 #	35,500	Ex Cherry Valley Lumber #101.
152,480	180 #	30,000	Ex Silver Logging Co. #3
124,500	180 #	21,100	See 2nd #2.
173,000	170 #	35,700	Ex Twin Falls Logging Co. #101; to Red River Lumber Co. #103; Fruit Growers Supply #103.
136,000	160 #	24,000	Ex Port Blakely Mill Co. #1.
245,700	200 #	44,800	
245,700	200 #	44,800	
245,700	200 #	44,800	
226,000	200 #	37,500	Ex Potlatch Forests Inc. #24.
			Ex Columbia & Nehalem River #117; to Columbia & Cowlitz #109.
222,000	200 #	37,500	To Rayonier Inc. #110
247,000	200 #	42,500	To Rayonier Inc. #111
220,000	200 #	37,500	Ex Clemons Logging Co. #6
263,250	210 #	46,900	
247,000	200 #	42,500	To Kosmos Timber Co. #12; to U. S. Plywood Corp. #12.
245,000	200 #	42,500	Ex Clemons Logging Co. #8.
293,000	225 #	59,600	Became Chehalis Western #120; returned to WTC #120; now Rayonier #120.
355,300	215 #	75,000	
355,300	215 #	75,000	
160,000	200 #	35,200	Ex Simpson Logging Co. #4; Peninsular Ry. #4.
110,000	200 #	23,900	Original Cherry Valley Lumber Co. #3; to Oregon Operations.

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Engine Weight	Boiler Pressure	Tractive Effort	Remarks
139,000	180 #	27,000	Ex Twin Falls Logging Co. #102.
139,000	180 #	27,000	Ex Twin Falls Logging Co. #103.
177,000	200 #	38,480	Ex Shaw-Bertram Lumber Co.; to Kosmos Timber Co. #10.
293,000	225 #	59,600	To Sierra RR #38; now Rayonier #38.
245,000	200 #	42,500	Ex Ostrander Ry. & Timber #7; Kosmos Timber #1; now U.S. Plywood #11.
210,000	200 #	42,500	Ex Mud Bay Logging #8.
210,000	200 #	42,500	Ex Clemons Logging Co. #7. See Washington Operations #9.

- *Timber Company*

Thurston County Logging Co.
(Mud Bay Logging Company)

1	2-6-0TT		
2	Heisler	Heisler	# 1102—1906
3	2-6-2TT	Baldwin	#33038—1908
4	2-8-2	Baldwin	#38836—1912
5	Shay	Lima	# 3084—1920
6	Heisler	Heisler	# 1505—1924
7	Heisler	Heisler	# 1528—1926
8	2-6-6-2	Baldwin	#60412—1928

Old Baldwin Mikado Hauling a Log Train at Klamath Falls Branch of Weyerhaeuser Timber Company

Single-Expansion, Articulated Locomotive, Built by Baldwin in 1929, in Service at the Longview Operation

A View in the Pine Timber Holdings of the Weyerhaeuser Timber Company at Klamath Falls

traversing curves that there was a minimum amount of flange wear. and it was found that tire turning could be eliminated until made necessary by tread wear.

In 1923 the Clemons Logging Company purchased a 2-6-6-2 type side tank superheated Mallet. This locomotive had 17 in. and 26 in. by 24 in. cylinders, 44 in. diameter drivers, 200 lb. working pressure, 37,500 lb. tractive power, 182,000 lbs. on drivers, and was equipped to burn oil. The company had been using geared locomotives on their main line and this Mallet which was to replace one of the geared machines was to operate on 60-pound rail, 30 degree curves and 4 per cent grade. The performance of this machine resulted in the Company's purchasing two more of these locomotives of the same general construction, but larger than their first Mallet.

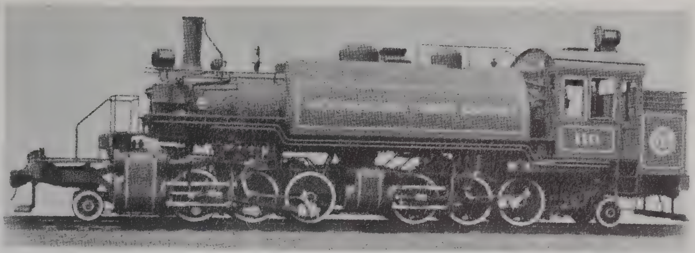
The Potlatch Lumber Company, another Weyerhaeuser associate company, also purchased one of these superheated Mallet locomotives to operate on 60-pound rail, 35 degree curves, and 8 per cent grade.

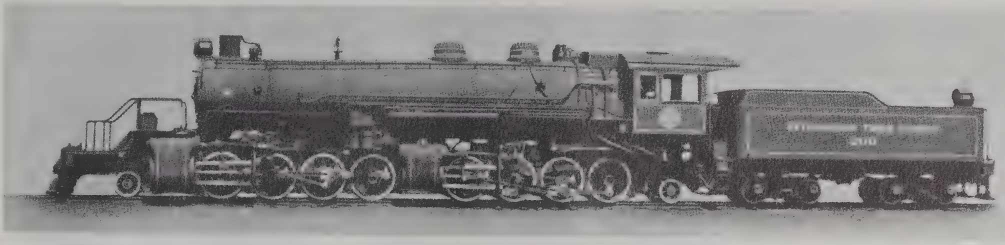
The Mud Bay Logging Company, before mentioned as the first Weyerhaeuser affiliate to purchase a Baldwin logging locomotive in the Northwest, purchased a 2-6-6-2 superheated Mallet with a separate tender. This locomotive has not only fulfilled the specified requirements, but is at present hauling, under their worst conditions, three cars more than the theoretical tonnage for this locomotive.

In 1927, after the timber had been logged off at their Twin Falls Logging and Cherry Valley operations, the Weyerhaeuser Timber Company opened their Skookum Chuck operation at Vail, Washington. This property required a main line railroad 27 miles in length, laid with 70-pound rail. The maximum grade was 2 per cent against the empties and the curves were

Mallet Locomotive of the 2-6-6-2 Type Built in 1928

Gauge of Track	4′ 8½″
Cylinders	17″ and 26″ x 24″
Steam Pressure	200 lb.
Drivers, Diameter	44″
Weight on Drivers	187,600 lb.
Weight, Total	228,500 lb.
Tractive Force	37;500 lb.





Mallet Locomotive of the 2-8-8-2 Type Built for Weyerhaeuser Timber Company in 1929

Gauge of Track	4′ 8½″	Steam Pressure	215 lb.	Weight, Total Engine	355,300 lb.
Cylinders, H.P.	23″ x 28″	Drivers, Diameter	51″	Weight, Engine and Tender	495,000 lb.
Cylinders, L.P.	35″ x 28″	Weight on Drivers	319,550 lb.	Tractive Force	75,000 lb.

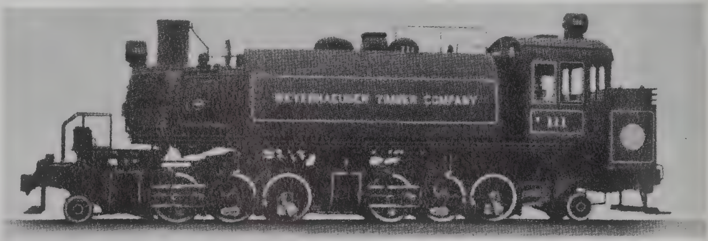
confined to 6 degrees. The locomotives originally purchased for Twin Falls and Cherry Valley were used, and the Mikado with 70 tons on drivers from Cherry Valley, after having been superheated, is still handling the tonnage on the main line, with the Mikado of the same weight, from Twin Falls held in reserve as a spare. This superheated Mikado, under normal operating conditions, is making three round trips per day, or 162 miles, and is hauling an average of 135 to 140 loads from the woods, which is the equivalent of 7,560 car-mile per day.

The original motive power used on the spurs at the Skookum Chuck operation, which had 60-pound rail, 5 per cent grades and 40 degree curves, consisted of two used geared locomotives. One of these locomotives, an 80-ton Shay, is still in service. To this equipment was added a Pacific Coast Shay and a Heisler, rated as a 90-ton locomotive, also a 2-6-6-2 superheated semi-saddle tank Mallet weighing 187,600 lbs. on drivers and developing a tractive effort of 37,500 lbs. and a simple superheated semi-tank articulated locomotive weighing 219,750 lbs. on drivers and developing a tractive effort of 46,900 lbs.

It is difficult to determine the actual mileage made by these various types of locomotives, but it has been estimated that the Mallet locomotive averages 90 miles per day, whereas the geared machines are averaging 60 to 70 miles per day. This difference in mileage may be the result of the variation in spur service to which the different types of locomotives are assigned on this particular operation, but this relation of miles operated per day by each type corresponds closely to the results which have been obtained by other logging operations.

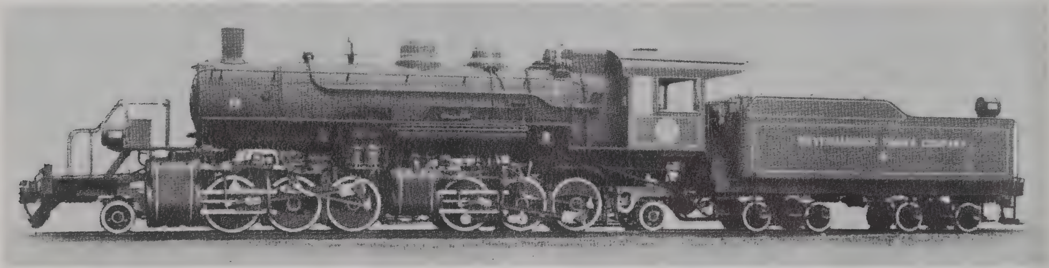
The company's largest operation is the Longview Branch, started in 1929 with the mill located at Longview and a 24-mile railroad to tap their timber. The worst condition on this road was seven miles of 3.7 per cent grade over which the empty cars had to be hauled. To handle the required tonnage on this road a 2-8-8-2 superheated Mallet with separate tender was purchased. This locomotive, Road No. 200, with 23 in. and 35 in. diameter by 28 in. stroke cylinders, 51 in. diameter drivers, 215 lb. working pressure, 355,300 lb. total engine weight, 319,550 lbs. on drivers and 75,000 lbs. tractive effort, was the largest locomotive ever to be placed in service by a lumber company.

One hundred and one cars, each 52 feet in length, loaded with logs, have been brought in from the woods in one train with this locomo-



Single-Expansion, Articulated Locomotive Built by Baldwin in 1929

Gauge of Track	4′ 8½″
Cylinders (4)	16″ x 24″
Steam Pressure	210 lb.
Drivers, Diameter	44″
Weight on Drivers	219,750 lb.
Weight, Total	263,250 lb.
Tractive Force	46,900 lb.



Mallet, 2-6-6-2 Type Locomotive Built in 1934 for the Weyerhaeuser Timber Company

Gauge of Track	4′ 8½″	Drivers, Diameter	51″	Weight on Drivers	258,580 lb.
Fuel	Oil	Heating Surface	3,113 sq. ft.	Weight, Total Engine	296,180 lb.
Cylinders, H.P.	20″ x 28″	Superheating Surface	895 sq. ft.	Weight, Engine and Tender	437,400 lb.
Cylinders, L.P.	31″ x 28″	Grate Area	57.3 sq. ft.	Tender Water Capacity	7,000 U. S. gal.
Steam Pressure	225 lb.	Tractive Force	59,600 lb.	Tender Fuel Capacity	2,500 U. S. gal.

tive, but the capacity in empties over the seven miles of 3.7 per cent, is 45 empties which makes a logical train of 90 cars by doubling over the 3.7 per cent. Under normal operating conditions, two round trips, or 124 miles, were made daily with this locomotive from the time it was placed in service in July, 1929, until early in 1934, when a second locomotive of this type, Road No. 201, was delivered. Locomotive No. 200 was then placed in the shop to receive its first general overhauling after having been in continual service for 4½ years.

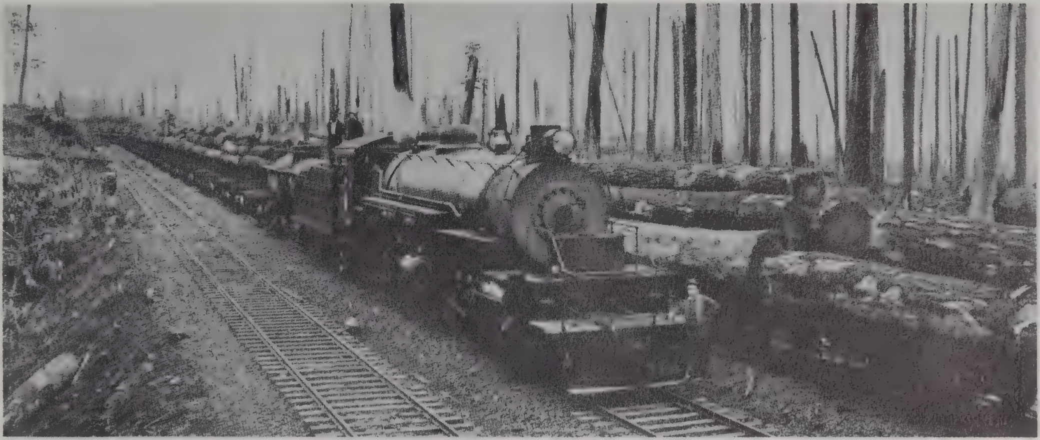
With locomotive No. 201 handling the trains on the main line, No. 200 is now being operated as a swing engine, handling empties from the main line to the spurs and delivering loads to locomotive No. 201 on the main line. The yard switching around the mill is handled by one of the Mikados brought from the old Twin Falls operation.

On the spurs in the woods the company is operating three superheated simple articulated semi-saddle tank locomotives weighing 208,700 lbs. each on drivers and developing a tractive effort of 44,800 lbs. each. In addition to the Mallet originally built for their Potlatch operation, and the three simple articulated semi-saddle tank locomotives, they are also operating one Heisler, rated as a 90-ton machine, and a Shay secured from one of their other properties. All of these locomotives operate on their maximum spur conditions of 7 per cent grade and 30 degree curves.

The compound naturally uses less fuel than the simple articulated locomotives, but this is offset to some extent by the relatively greater tractive effort and also by the speed at which the simple articulated locomotive will operate. Both of these types have given very satisfactory results in logging service.

With the exception of the Humbird Lumber Company, and the Potlatch Lumber Company, now a unit of Potlatch Forests, Inc., all of the companies so far referred to are, or were, located in the western portion of the state of Washington where the forests consist of fir, hemlock, cedar, etc.

The most recent development of the Weyerhaeuser Timber Company is their Klamath Falls Branch, located in the pine district of southern Oregon. The operation of their 30 miles of main line railroad, which includes the hauling of all their log trains, was handled by two Mikados, which had separate tenders. Both of these locomotives, one of which had previously been used at Twin Falls and the other



Mallet Locomotive Number 200 at the Longview Operation Delivering Empty Cars to the Woods. The Trainload of Logs on the Siding Is Waiting to Be Hauled to the Mill.

at Cherry Valley, were the same size and of the same proportions, each developing 27,000 lbs. tractive effort. These locomotives were of an uneconomic size for the tonnage to be hauled over the main line, and, being saturated engines, they were not economical in the use of fuel in this service. Realizing that a decided saving could be made in operating costs with a modern locomotive of the size and type best suited for their main line, the company purchased a 2-6-6-2 superheated Mallet with separate tender. This locomotive was delivered in September, 1934, to replace the two Mikados. No geared locomotives are being used on this operation at the present time, and these two Mikados will be used for switching on the spurs and for the ballasting and construction.

The new Mallet, Road No. 4, has 20 in. and 31 in. diameter by 28 in. stroke cylinders, 51 in. diameter drivers, 225 lb. working pressure, develops 59,600 lb. tractive effort and weighs 258,580 lbs. on drivers.

On the test trip made after this locomotive was delivered, the train consisted of 58 loads of logs, one oil tank car, and a caboose, making an estimated gross tonnage, exclusive of the engine and tender, of 2,380 tons which was hauled over the 0.75 per cent grade from the woods to the mill. Not only are the officials of the company satisfied with the performance of this locomotive but they are pleased with the light fuel consumption which averages approximately 500 gallons per day for their present daily mileage of 66 miles. This is no more than the amount of fuel used by either one of the Mikados for the same mileage. Twenty-six locomo-

Trial Trip of Mallet Locomotive Built in 1934, Hauling Oil Car, Fifty-eight Loads of Logs and a Caboose

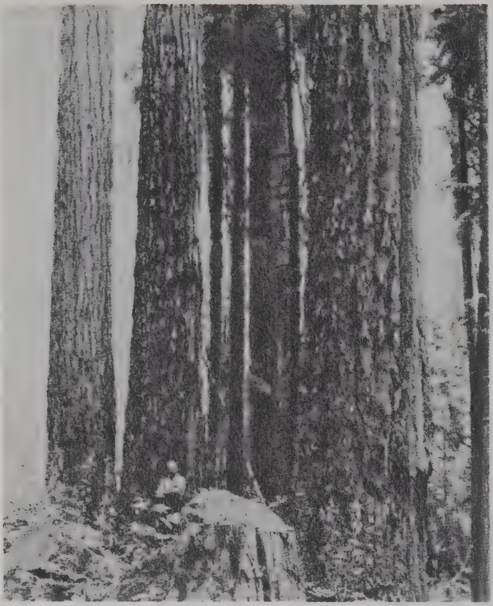
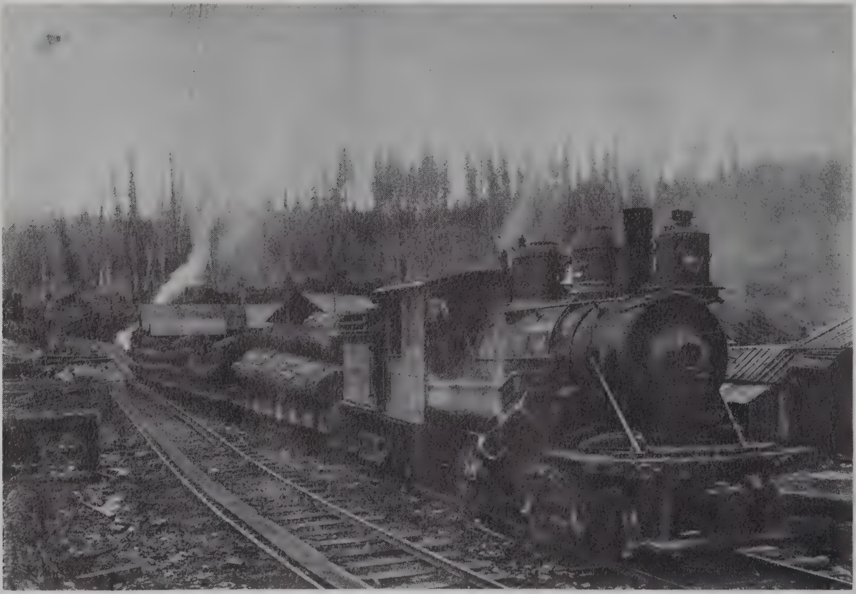


Photo by John D. Cress, Seattle

Douglas Fir and Hemlock Timber

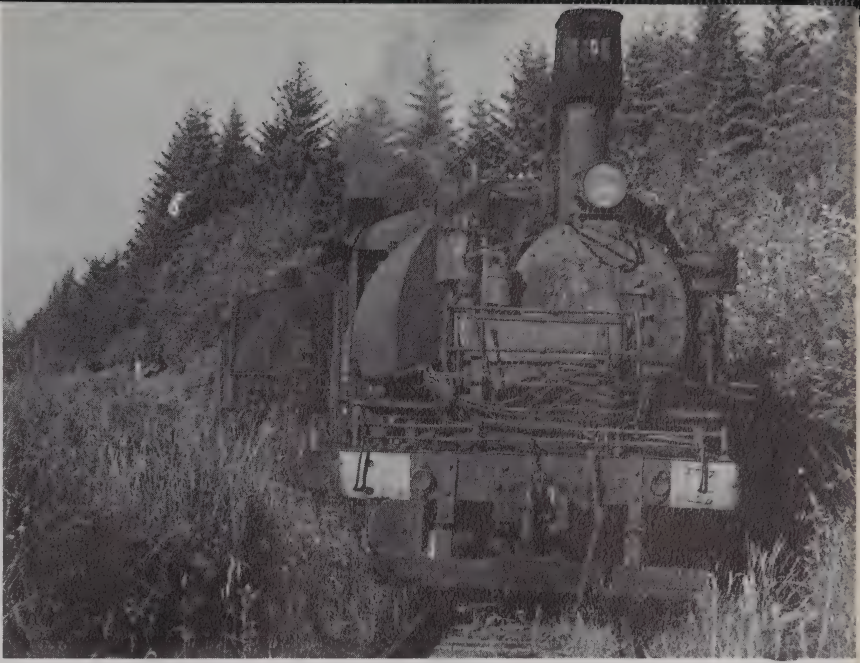
tives have been built by The Baldwin Locomotive Works for the Weyerhaeuser Timber Company and its subsidiaries in the Northwest. As each locomotive was built, economy and safety devices were specified so that their modern locomotives are equipped with superheaters and all other economy devices which are adaptable to logging service. Individual state and A.S.M.E. boiler codes were specified and all the I.C.C. rules and regulations for safety requirements were adhered to in the construction of locomotives for this company. The planning of each new branch of the company has included the study of the adaptability and relative cost of operation of steam locomotives of both the geared and rod types, also electric locomotives, gas-electric, and diesel-electric locomotives, and the company's conclusions have been indicated by the type of motive power which has been installed on their last three operations.

Mr. Frederick Weyerhaeuser died in 1914, but his sons and grandsons, with their associates, have carried on with the same foresight and careful planning which characterized his success.



CLIMAX LOCOMOTIVE—one of first locomotives used at White River about 1909. Burned slab wood from sawmill. Originally the equipment did not include cars; instead, logs were made up into "turns" and skidded down center of track on planks.
--Courtesy of Weyerhaeuser Timber Co.

THAT'S WHY MALLETS WERE MADE — Running boards on WTC's 106 cut a swath through the brush as a pair of double-stacked 2-6-6-2T's swing down out of the woods on the Longview operation. —Al Krieg photo.



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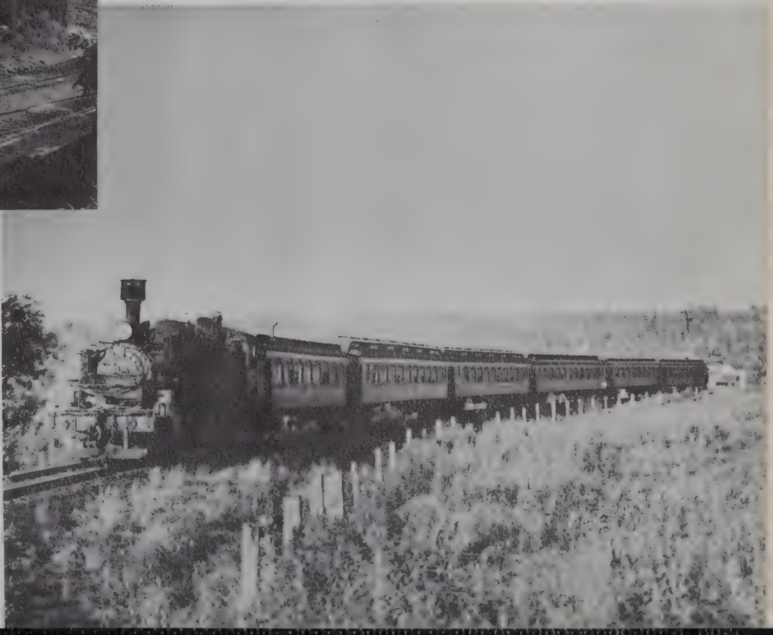
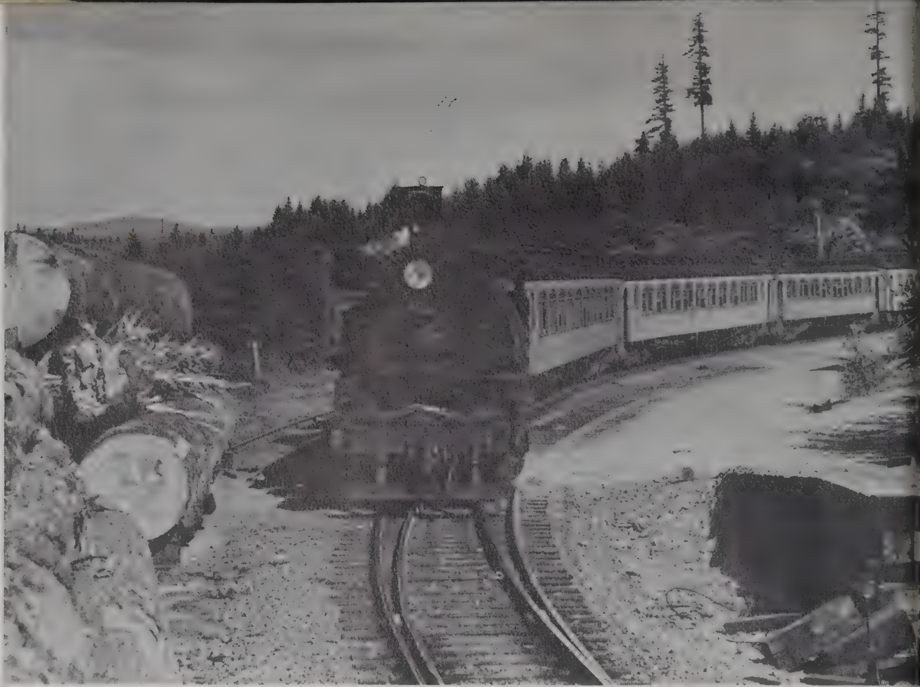
WHEN MALLETS WERE KINGS on Weyerhaeuser workings, headquarters camp east of Longview, Washington, was an admixture of cookhouse aromas, piney perfume and the sweet smell of bunker C smoke. —Al Krieg photo.



LOGGERS' LIMITED Truss-rodded consist carries woodsmen from Kelso-Longview, Washington, every Sunday afternoon to WTC's headquarters camp in the Mt. St. Helens area returning them to hearthside Friday evenings. —Al Krieg photo.



TOWN-BOUND is weekend train carrying loggers from camp to Kelso-Longview. (Below) SADDLE OR SIDE-TANK? The Weyerhaeuser mallets which presented a saddle-tank appearance from a side-on-view seemed neither fish nor fowl from the front, for the tanks didn't extend over the boiler top. The "bandstand" from smokebox front to pilot beam was usually a utilitarian cascade of tool boxes plus dozens of yards of cable. —Al Krieg photos.